

## **Notes of EPA-California Call about the CES-Mendota Permit Application**

Date: October 20, 2020

Participants: EPA Region 9, State Water Board, Regional Water Board, CalGEM, Cadmus.

The purpose of the call was to discuss the state's comments on the Class VI permit application.

Many of the state's comments about the permit application are similar to those from EPA. EPA is in the middle of its technical review and has provided questions to the applicant on three of four topics (geology, financial responsibility/emergency and remedial response, and AoR modeling); a fourth request on testing and monitoring and well plugging and construction is forthcoming.

All of these areas are within the UIC Program scope. The applicant must meet all applicable state and federal requirements, and EPA is coordinating with other entities as needed. UIC permittees are not subject to NEPA; the UIC permit application review is functionally equivalent to a NEPA review. NHPA and ESA evaluations must be performed, however.

### **CalGEM Comments**

California thought the applicant prepared the best geologic description they could with the data they have. EPA said its comments are to clarify the geologic narrative and confirm objectives of pre-operational testing. EPA is not required to witness any pre-operational tests, but it typically tries to.

The state would like to see some of the CBI in the application. EPA encouraged them to reach out directly to CES for this information.

In general, the application addressed many of CalGEM's early questions. There are some questionable high permeability zones; however, there is no way to confirm permeability prior to drilling. Seismic imaging cannot provide the level of detail that core sampling will.

Regarding the geomechanical review, CalGEM recommends that fault slip/reactivation analysis be performed. While the site appears to pose a low seismic risk, if any fault is at critical stress, small pressure changes could reactivate it. EPA/Cadmus agree there are still some unknowns, particularly about Fault 13, and additional data and a risk analysis are appropriate.

CalGEM added that the applicant should use static, rather than dynamic, properties for the risk analysis. Also, the data for triaxial lab tests should be representative of reservoir stress conditions.

A sensitivity analysis of varying permeability values is recommended given the potential for vertical fluid migration. The 10% value for vertical permeability relative to horizontal used in the application is a general rule of thumb that is sometimes used when other data are not available. Although it is acceptable for this initial stage of model development, EPA/Cadmus agreed that a better estimate based on site-specific data and a sensitivity analysis will be needed.

## **Water Board Comments**

The WB asked how the UIC Program addresses the potential for CO<sub>2</sub> reactions with ground water if there were a leak. EPA/Cadmus replied that the UIC construction requirements (i.e., for corrosion-resistant materials), continuous mechanical integrity monitoring to identify leaks, monitoring in formations above the confining zone, and emergency response measures are in place to prevent, detect, or mitigate any damage associated with a CO<sub>2</sub> leak. Class VI construction requirements are tailored to CO<sub>2</sub> corrosion concerns.

Formation testing and step rate testing will be required as permit conditions.

It is unclear why the applicant selected 20 years as the high end of the injection time frame. EPA explained that if they wanted to extend this timeframe, a major modification of the UIC permit would be required.

EPA is unsure of the timing of an updated water well survey. The state will need additional details about the wells (i.e., including specific locations rather than centroids), ideally based on a field survey.